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Hematotoxicity of Peptide Receptor Radionuclide Therapy (PRRT) – A Single Institution Experience

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BACKGROUND: Peptide receptor radionuclide therapy (PRRT) with ^{177}Lu-DOTATATE is a very encouraging systemic treatment for somatostatin receptor (SSTR) expressing malignancies. It is known to have an overall safe profile with relatively little side effects. We present our experience with ^{177}Lu-DOTATATE in regard to hematologic toxicity.

METHODS: Eighty-two patients (40 women and 42 men, mean±SD: 62.9±10.4 years) with progressive SSTR expressing tumors were referred to undergo PRRT with 177Lu-DOTATATE from July 2018 to July 2020. Laboratory tests were obtained 1 week before each cycle and every 3 months at follow-up. Toxicity was determined based on the National Cancer Institute Common Terminology Criteria for Adverse Events (NCI CTCAE) V5.0. Inclusion criteria for hematologic parameters prior to each cycle were: white-cell count of >2000/mm3, hemoglobin level of >8.0 g/dL, and platelet count of >75,000/mm3. Lines of prior treatments were documented.

RESULTS: 49/82 (59.8%) patients completed all 4 cycles of PRRT. 20/82 (24.4%) patients are currently being treated. 12/82 (14.6%) patients had to discontinue PRRT (2/12 (16.7%) were due to grade 3 thrombocytopenia (1 patient after only 1 cycle of PRRT while receiving Pembrolizumab treatment in parallel)). 1/82 (1.2%) patient was lost in follow-up.

Out of the 81 patients treated/being treated, grade 3 leukopenia, neutropenia, anemia and thrombocytopenia occurred in 2% (2/81), 2% (4/81), 2% (3/81) and 0% (0/81), respectively, and in a total of 5/81 (6%) of patients. Grade 2 thrombocytopenia was seen in 4% (3/81). No grade 4 hematotoxicity was observed.

Mean prior lines of treatment was 3.4 ± 1.4 (range: 1 – 7). The median follow-up time since PRRT initiation was 10±7 months (range 7–25 months).

CONCLUSION: Our preliminary data show that in our heavily pretreated patient population, PRRT is overall a safe treatment, showing grade 3 leukopenia, neutropenia, anemia and thrombocytopenia in 2%, 2%, 2% and 0%.

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